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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,696	09/19/2005	Junji Takenaka	1691-0209PUS1	9538
2292 7590 06/11/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
FREEMAN, JOHN D				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
06/11/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/549,696

Applicant(s)

TAKENAKA ET AL.

Examiner

John Freeman

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009 and 15 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/003)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 March 2009 has been entered.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 4-7, 9, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momoda et al. (EP 1130038).
3. Momoda et al. (EP 1130038) disclose a curable composition comprising (A) a polymerizable monomer, (B) a polyfunctional polymerizable monomer, (C) a difunctional polymerizable monomer, and (D) a photochromic compound.
4. Component (A) is considered to be Applicants' component (III). Specific embodiments include polyethylene glycol methacrylate and methyl ether polyethylene glycol methacrylate [0037].
5. Component (B) is Applicants' component (I) [0050, formula (4)]. Specific embodiments include trimethylolpropane trimethacrylate and trimethylolpropane triacrylate [0052].
6. Component (C) is Applicants' component (II) [0057, formula (5)]. Specific embodiments include BPE (2,2-bis(4-methacryloyloxyethoxyphenyl)propane), diethylene glycol dimethacrylate and triethylene glycol dimethacrylate [0062].
7. Momoda '038 discloses the weights of (B) and (C) together, i.e. "...[(B) and (C)] are used in amounts of from 50 to 99% by mass...based on the total mass of the monomers..." [0069]. They then disclose the individual monomer weights in terms of the sum of both monomers: (B) is 2 to 50% by mass based on the sum of weights of (B) and (C), while (C) is 50-98% by mass based on the same sum. The

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following example shows how the weights overlap with those claimed by Applicants. If (B) and (C) combine to make 50% of the total weight of all monomers, and (B) constitutes 20% by weight of the sum of (B) and (C), and (C) constitutes 80% by weight of the same sum, then component (B) constitutes 10% of the total weight of all monomers and (C) constitutes 40% of the total weight.

8. The following table summarizes the weight percentage values (based on total weight of all monomers) for the instant application and '038:

		Table II					
		Applicant					
	'038	Claim 1	Claim 4	Claim 6	Claim 7	Claim 9	Claim 10
(A)/(III)	1-50%	5-89%	0-89%	5-89%	30-77	0-89%	0-70%
(B)/(I)	1-50	1-15	1-60	1-15	3-10	1-60	10-60
(C)/(II)	25-97	10-80	10-90	10-80	20-60	10-90	20-90

9. On the one hand, as seen in Table II, Momoda '038 clearly meets all the presently claimed weight percentage values. On the other hand, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

10. The examiner takes the position that the cured product of these compositions would have tensile strengths close enough to said strength that it would have been obvious for one of ordinary skill in the art to optimize the ratio of monomers to achieve a product with higher tensile strength. One of ordinary skill would appreciate that the ratios of monomers used would affect the resultant tensile strength because of their varying hardness values. Lenses must be able to resist impacts and drilling in order to be of use. As such, one of ordinary skill would recognize the necessity of creating a lens that can withstand a baseline amount of abuse. Thus, one could reasonably experiment with the conditions of the invention to arrive at a tensile strength greater than 20kgf.

11. Component (D), like component (IV), is a photochromic compound, e.g. fulgimide and spirooxazine compounds [0081]. The half-life period of photochromic compounds (IV) is known to

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decrease upon transitioning from a polymerizable solution to a polymerized product [0004]. Although '038 is silent with regard to a cured product with a photochromic compound having a fading half-life of less than 30 times the half-life found in the curable composition, the examiner takes the position that the compositions inherently possess such properties. For example, Example 37 uses chromene 2, which is the same as chromene 2 of the instant application, and has a half-life of 0.7 minute. Although these examples are not fully analogous, they exemplify how, because of the broad range claimed, most any photochromic compound would exhibit half-life properties as claimed in the present invention in most any composition. Furthermore, one of ordinary skill in the art could arrive at such a property without undue experimentation because of the broad range.

12. Polymerization initiators such as benzoyl peroxide [0098] and benzoin [0102] can be used in the composition as in the case of component (V). The examiner notes that Applicant acknowledges that benzoin is a photopolymerization initiator on p21 line 15 of the specification.

13. With regard to the limitation of a photochromic lens substrate found in claims 1, 4 and 12-14, Momoda '038 teaches a lens material made from the composition [0094].

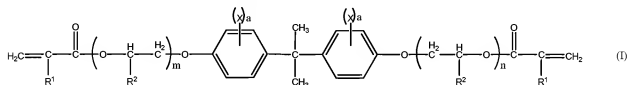
14. With regard to the bifunctional to hexafunctional urethane oligomers or bifunctional to hexafunctional polyester oligomers of claim 5, Momoda et al disclose the use of triurethaneoligomer tetraacrylate and urethaneoligomer hexamethacrylate [0052]. This is another example of component (B). It can, however, be used with the other examples of (B): trimethylolpropane trimethacrylate and urethaneoligomer hexamethacrylate can be used together [0052, ln 10].

15. Claims 2, 8, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momoda et al. (EP 1130038) in view of Imura et al. (U.S. 5,556,931).

16. Each claim presents a further limitation of an independent claim. Specifically, each claim further limits component (II) such that it is composed of two compounds each according to formula (2). Type one has a sum of $(m+n)=0$ to 5. Type two has a sum of $(m+n)=6$ to 30. Type two is present in a molar amount of no more than three times as much as type one.

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17. Momoda '038 discloses the cured compositions of the parent claims as previously described.
18. While Momoda '038 discloses a value of $(m+n)=2$ to 6 on average, they are silent with regard to higher $(m+n)$ values [0057 p10 ln 12].
19. Imura et al. disclose the following formula (I) for use in a lens substrate:



20. As the integer a can equal zero, this is the same as Applicants' formula (2) (col 3 ln 1+).
21. Imura et al. disclose that each of m and n can be an integer from 1 to 15 (col 3 ln 55). They further teach that compounds with values of $(m+n)=2$ to 3 are very hard (col 5 ln 2), while those with values of $(m+n)=6-12$ are less hard, but better resist impacts (col 5 ln 24-29). Values over 12 result in even softer compounds (col 5 ln 29-32).
22. At the time of the invention, it would have been obvious to one of ordinary skill in the art to mix the hard and soft monomers in various ratios until a product with desired hardness, tensile strength and impact resistance was produced. One of ordinary skill would appreciate that having too much of monomers with $(m+n)$ values over 12 would result in very soft compounds, and so would limit the amount of higher molecular weight monomers.
23. However, note that while Imura et al. does not disclose all the features of the present claimed invention, Imura et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nieveit*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely the proportions of monomers having different $(m+n)$ values should be varied to achieve desired physical properties of a finished product and in combination with the primary reference, discloses the presently claimed invention.

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24. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momoda et al. (EP 1130038) in view of Geffcken et al. (U.S. 3,713,869).

25. Claims 12 and 14 are directed toward the cured compositions of claims 1 and 4 respectively, wherein the substrates have a hard coat layer and a buffer layer. The buffer layer is located between the substrate and the hard coat layer, and has a lower pencil hardness than the hard coat layer.

26. Momoda '038 teaches the use of a hard coating agent to create a thin film on the cured product [0103] as in claims 12 and 14. Momoda '038 is silent, however, with regard to the use of a buffer layer interposed between the substrate and the hard coating layer.

27. The use of intermediate (or buffer) layers to promote adhesion between a hard coating and a lens substrate is well-known in the art. For example, Geffcken et al. disclose the use of an intermediate layer between a hard inorganic layer and a plastic substrate (col 2 ln 56+). The polymer-based intermediate or primer layer improves the adhesion of hard layer to the plastic substrate; said intermediate layer would inherently have a pencil hardness less than the hard inorganic layer.

28. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use a softer polymer-based buffer layer between the hard coating layer and the lens to promote adhesion between them.

29. Note that while Geffcken et al. does not disclose all the features of the present claimed invention, Geffcken et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely softer intermediate layers promote adhesion between a hard outer coat and a plastic lens and in combination with the primary reference, discloses the presently claimed invention.

Claim Rejections - 35 USC § 112

30. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

31. Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specific types of other polymerizable monomers, i.e. monomers other than a polyfunctional polymerizable monomer having a functionality of 3 or more and an L-scale Rockwell hardness of 60 or more such as those described page 12 lines 15 through page 14 line 15 of the specification, does not reasonably provide enablement for *any* type of polymerizable monomer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

32. Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1990). Otherwise **undue experimentation** would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claims 1-15 can be used as claimed and whether claims 1-15 meet the test is stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. Inter. 1986) and *In re Wands*, 8 USPQ2d 1400, 1404 (Fed.Cir. 1988). Upon applying this test to claims 1-15, it is believed that undue experimentation **would** be required because:

(a) *The quantity of experimentation necessary is great* since claims 1-15 read on a cured composition containing (III) *any* other polymerizable monomer different from the presently disclosed monomers (I) and (II) while the specification discloses a cured composition containing a polymerizable monomer other than a polyfunctional polymerizable monomer having a functionality of 3 or more and an L-scale Rockwell hardness of its homopolymer of 60 or more (p12, ln 4-14).

(b) There is **no direction or guidance presented** for other polymerizable monomers such as alkyl, di-, or mono-(meth)acrylate, butadiene, (meth)acrylamide, etc. Monomers such as these are not included in the exemplary monomers on page 12 lines 15 through page 14 line 15 of the specification.

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(c) There is an ***absence of working examples*** concerning other monomers such as mono-(meth)acrylate, butadiene, (meth)acrylamide, etc.

33. In light of the above factors, it is seen that undue experimentation would be necessary to make and use the invention of claims 1-15.

Response to Arguments

34. Applicant's arguments filed 23 March 2009 and 15 May 2009 have been fully considered but they are not persuasive.

35. Regarding rejections based on Momoda (EP 1130038):

36. The examiner greatly appreciates the data provided by Applicant. In light of the data, the examiner has withdrawn the rejections under 35 USC 102(b). The examiner agrees the examples of Momoda '038 do not disclose a composition having a tensile strength of at least 20 kgf.

37. Applicant submits, and the examiner agrees, "Applicants have demonstrated that all Examples of Momoda '038 which fall within the scope of the present invention lack" a tensile strength of at least 20 kgf. However, "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." *In re Courtright*, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967).

38. Further, the examiner maintains one of ordinary skill would be able to optimize the tensile strength of the cured product of Momoda '038, including strengths over 20 kgf. The following Table II appears in the rejection above:

		Table II					
		<i>Applicant</i>					
	'038	<i>Claim 1</i>	<i>Claim 4</i>	<i>Claim 6</i>	<i>Claim 7</i>	<i>Claim 9</i>	<i>Claim 10</i>
(A)/(III)	1-50%	5-89%	0-89%	5-89%	30-77	0-89%	0-70%
(B)/(I)	1-50	1-15	1-60	1-15	3-10	1-60	10-60
(C)/(II)	25-97	10-80	10-90	10-80	20-60	10-90	20-90

Note the significant overlap between the ranges disclosed by Momoda '038 and Applicant's presently claimed ranges. Exemplary monomers disclosed by Momoda '038 include the exact same exemplary monomers disclosed by Applicant for all three monomers. Also note the present claims 4, 9, and 10 do

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not even require the monomer (A)/(III). This implies the tensile strength results from, or at least *can* result from, the monomers (B)/(I) and (C)/(II) exclusively. Momoda '038 clearly discloses 1% (A)/(III), 50% (B)/(I), and 49% (C)/(II), wherein the latter value results from the balance of the two explicitly disclosed, former values. It is not clear how a cured product of such a composition would not have the presently claimed tensile strength, as it directly reads on the presently disclosed ranges. One of ordinary skill would appreciate that the ratios of monomers used would affect the resultant tensile strength because of their varying hardness values. Lenses must be able to resist impacts and drilling in order to be of use. As such, one of ordinary skill would recognize the necessity of creating a lens that can withstand a baseline amount of abuse. Thus, one could reasonably experiment with the conditions of the invention to arrive at a tensile strength greater than 20kgf.

39. The examiner also notes the composition of the present claims may broadly comprise at least 70% of (III) any polymerizable monomer other than monomers (I) and (II). Some claims allow for 89% of the composition to be this "any polymerizable monomer." The examiner notes the identity of said monomer (III) will greatly influence the tensile strength of any cured product because it constitutes such a large part of the cured product. Therefore, absent evidence to the contrary, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use amounts of monomers (A)/(III), (B)/(I), and (C)/(II) in Momoda '038, including those presently claimed, to produce a cured product with an effective tensile strength of 20kgf or more as presently claimed.

40. Regarding rejections based on Momoda '038 in view of Imura '931:

41. The examiner does not argue that Imura does not disclose the present invention; it is used as a teaching reference. The examiner takes the position that one of ordinary skill in the art would recognize that varying the (m+n) values would result in different properties for the final lens product, and could use Imura as a guide as to what properties would result.

42. Regarding rejections based on Momoda '038 in view of Geffcken '869:

43. The examiner takes the position that although Geffcken is silent with regard to the present invention's lens substrate, the teaching reference is evidence that using an adhesion promoting buffer layer between a lens substrate and a hard coating layer is well-known in the art.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Komuro '299 discloses monomers of the present invention used for photochromic compositions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Freeman whose telephone number is (571)270-3469. The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571)272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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